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Epidemiological, Clinical and Paraclinical Aspects of Couple Infertility at the Ebolowa Regional Hospital Center

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Abstract

Background: Couple infertility represents a growing public health challenge with profound psychological, social, and cultural implications, particularly in low- and middle-income countries. In Cameroon, data remain limited in several regions, including the South. This study aimed to characterize the epidemiological and clinical profile of couple infertility at the Ebolowa Regional Hospital Center (ERHC), thereby contributing context-specific evidence to guide clinical practice and public health interventions. **Methods:** A descriptive cross-sectional study with retrospective data collection was conducted in the Department of Gynecology and Obstetrics of ERHC from September 22, 2022, to September 22, 2023. Medical records of couples consulting for infertility and meeting World Health Organization diagnostic criteria were included. Sociodemographic, clinical, biological, and radiological data were extracted using a standardized pretested form and analyzed descriptively using Microsoft Excel 2010. **Results:** Among 1850 gynecological consultations, 262 were related to couple infertility, yielding a prevalence of 14.16%. Women had a mean age of 28.6 years, with the 26 - 30 age group most represented (32.1%). Male partner involvement in diagnostic evaluation was observed in 55% of cases. Most women were formally employed (67.9%) and living in cohabitation (44.3%). The mean frequency of sexual intercourse was 3.7 times per week, predominantly 3 - 4 times weekly (54.2%). A documented history of *Chlamydia trachomatis* infec-

tion was found in 41.2% of women. Primary infertility accounted for 64.1% of cases. Female factors were the leading cause of infertility (47%), mainly due to tubal obstruction (56.5%), uterine fibroids (24.4%), and polycystic ovary syndrome (15.3%). Male factors contributed to 32% of cases, with teratozoospermia (13.9%) and oligoasthenozoospermia (11.8%) being the most frequent abnormalities. Couple infertility is a major reproductive health concern worldwide, particularly in low- and middle-income countries where its psychosocial and societal impact is substantial. In Cameroon, regional data remain scarce, especially in the South Region. This study aimed to describe the epidemiological and clinical characteristics of couple infertility at the Ebolowa Regional Hospital (ERHC). **Conclusion:** Couple infertility constitutes a substantial proportion of gynecological consultations at ERHC, with a predominance of primary infertility and female etiologies, particularly tubal damage likely related to sexually transmitted infections. Limited male participation may lead to underestimation of male infertility. These findings underscore the urgent need to strengthen STI prevention and early treatment, promote timely referral to specialized care, and enhance male involvement in infertility evaluation to reduce the burden of infertility in Southern Cameroon.

Keywords

Couple Infertility, Epidemiology, Clinical Characteristics, Etiologies, Ebolowa, Cameroon

1. Introduction

The ability to conceive and bear children is widely regarded as a fundamental aspect of human life and family stability [1]. When this ability is compromised, infertility often becomes a source of profound psychological distress, marital tension, social stigma, and emotional suffering, particularly in societies where fertility is highly valued [1]. As such, couple infertility extends beyond a purely medical condition to constitute a significant public health and social challenge [1]-[8].

The World Health Organization (WHO) defines couple infertility as the failure to achieve pregnancy after 1 year of having regular, unprotected intercourse, or after 6 months if the woman is older than 35 years of age [1]. While approximately 80% of pregnancies occur within the first six cycles of attempting conception, fertility declines progressively thereafter, and the probability of spontaneous conception becomes markedly low after two years [2]. Globally, infertility affects an estimated 60 to 180 million couples of reproductive age, with substantial disparities in prevalence and causes between regions [1].

The likelihood of conception per menstrual cycle is estimated at nearly 25% at the age of 20 years and declines steadily with advancing age [1] [3]. Etiologically, infertility is attributed to female factors in approximately 30% of cases, male factors in 20%, combined male and female factors in 30%, while remaining unex-

plained in about 10% of couples [5] [9]. These proportions, however, vary considerably depending on geographical location, socioeconomic context, access to healthcare, and prevalence of reproductive tract infections [10]-[20].

In sub-Saharan Africa, infertility represents a particularly sensitive issue due to its social consequences, including stigmatization, marital instability, and economic vulnerability, especially for women [2] [5] [7] [8]. The burden of infertility in this region is closely linked to preventable causes such as sexually transmitted infections, unsafe abortions, and poorly managed obstetric complications, which frequently result in tubal damage and secondary infertility [2] [5] [7] [8] [13]-[15].

In Cameroon, several hospital-based studies conducted in Yaoundé, Douala, and the Western Region have documented the epidemiological and etiological profiles of infertile couples [5] [8] [14] [15] [20]. These studies consistently report a predominance of female causes, notably tubal pathology, as well as a non-negligible contribution of male factors. However, despite these efforts, data remain scarce for the South Region of Cameroon, and particularly for the city of Ebolowa, where sociocultural characteristics, healthcare access, and disease patterns may differ from those of larger urban centers.

A better understanding of the local epidemiological and clinical characteristics of infertility is essential for improving diagnostic strategies, optimizing management, and implementing effective preventive measures tailored to the regional context. It is within this framework that the present study was conducted.

The objective of this study was to describe the epidemiological, clinical, biological, and radiological characteristics of infertile couples consulting at the Ebolowa Regional Hospital and to identify the main etiological factors associated with infertility in this setting.

2. Methods

2.1. Study Design and Setting

This was a descriptive cross-sectional study with retrospective data collection conducted in the Department of Gynecology and Obstetrics of the Ebolowa Regional Hospital Center, a referral facility in the South Region of Cameroon. The study period extended from September 22, 2022, to September 22, 2023.

2.2. Study Population

The study population included all couples consulting for infertility at ERH during the study period.

2.3. Inclusion and Exclusion Criteria

Included were medical records of couples consulting for conception desire in whom a diagnosis of couple infertility was established according to WHO criteria and whose records were complete for key study variables.

Excluded were couples consulting outside the study period, those without usable medical records, and incomplete files lacking essential variables (age, infertility type, main etiology).

2.4. Sampling Method

A non-probability convenience sampling method was used. All eligible records during the study period were included.

2.5. Data Collection and Analysis

Data were collected using a pretested standardized form and analyzed using Microsoft Excel 2010. Couple's clinical and paraclinical data were collected from patient file where the diagnosis of tubal obstruction was done by a hysterosalpingography and the diagnosis of *Chlamydia trachomatis* was done by serology. All other diagnosed male or female abnormalities respected standard procedures.

Descriptive statistics were used, including means, standard deviations, and proportions. Results are presented in tables and figures.

2.6. Ethical Considerations

Confidentiality and anonymity were strictly maintained. Authorization was obtained from the Head of the Department of Gynecology and Obstetrics prior to data collection.

3. Results

3.1. Frequency of Couple Infertility

During the study period, a total of 1850 gynecological consultations were recorded at the Ebolowa Regional Hospital. Among these, 262 consultations involved couples evaluated for infertility, corresponding to a prevalence of 14.16% among gynecological consultations.

Male partner participation in the diagnostic process was observed in 144 cases (55%), while 45% of male partners did not attend the proposed investigations.

3.2. Sociodemographic Characteristics of the Couples (Table 1)

Among women, age ranged from 16 to 45 years, with a mean age of 28.6 ± 4 years. The most represented age group was 26 - 30 years, accounting for 32.1% (84/262) of cases. Among men, ages ranged from 26 to 60 years, with a mean age of 34.5 ± 7 years. The 31 - 35-year age group was the most frequent (31.4%; 44/144).

The majority of women (67.9%; 178/262) and men (53.4%; 140/144) were employed in the formal sector. Unemployment was reported among 28.2% (74/262) of women.

Regarding marital status, 44.3% (116/262) of women were living in cohabitation, 38.2% (100/262) were married, and 17.6% (46/262) were single. Among men, 51% (73/144) were cohabiting, 38% (55/144) were married, and 11% (16/144) were single.

Table 1. Sociodemographic characteristic of infertile couples at the ERHC (n = 262 women, n = 144 men).

Variable	Category	Women n (%)	Men n (%)
Age (years)	Mean ± SD	28.6 ± 4	34.5 ± 7
Age group (years)	16 - 25	68 (25.9%)	28 (19.4%)
	26 - 30	84 (32.1%)	44 (31.4%)
	31 - 35	60 (22.9%)	38 (26.4%)
	>35	50 (19.1%)	34 (23.6%)
Marital status	Single	46 (17.6%)	16 (11.1%)
	Married	100 (38.2%)	55 (38.2%)
	Cohabiting	116 (44.3%)	73 (50.7%)
Occupation	Formal employment	178 (67.9%)	77 (53.4%)
	Informal/unemployed	74 (28.2%)	67 (46.6%)

3.3. Clinical and Paraclinical Characteristics of Female Partners (Table 2)

The mean duration of the desire to conceive was 3.70 years. The mean number of sexual intercourses per week was 3.7, with 54.2% (142/262) of couples reporting 3 - 4 intercourses per week.

Table 2. Clinical and paraclinical characteristics of female partners suffering from couple infertility at the ERHC (n = 262).

Variable	Mean ± SD/n (%)
Age at first sexual intercourse (years)	17.3 ± 2.1
Duration of desire to conceive (years)	3.7 ± 1.8
Sexual frequency (times/week)	3.7 ± 1.2 (3 - 4 times: 142, 54.2%)
History of sexually transmitted infections	Chlamydia trachomatis: 108 (41.2%)
	Mycoplasma: 48 (18.3%)
	Neisseria gonorrhoeae: 8 (3.1%)
Type of infertility	Primary: 168 (64.1%)
	Secondary: 94 (35.9%)
Female infertility etiologies	Tubal obstruction: 148 (56.5%)
	Uterine fibroids: 64 (24.4%)
	Polycystic ovary syndrome (PCOS): 40 (15.3%)
	Ovarian reserve depletion: 28 (10.3%)
	Endometriosis: 6 (2.3%)
	Uterine synechia: 6 (2.3%)

The mean age at first sexual intercourse among women was 17.34 years.

A history of sexually transmitted infections was frequently documented. Chla-

mydia trachomatis infection was identified in 41.2% (108/262) of women, Mycoplasma infection in 18.3% (48/262), and Neisseria gonorrhoeae infection in 3.1% (8/262).

Primary infertility accounted for 64.1% (168/262) of cases, while 35.9% (94/262) presented with secondary infertility.

Female etiologies of infertility were dominated by tubal obstruction, observed in 56.5% (148/262) of cases, followed by uterine fibroids in 24.4% (64/262) and polycystic ovary syndrome in 15.3%.

3.4. Clinical and Paraclinical Characteristics of Male Partners (Table 3)

Among the 144 male partners who participated in the evaluation, 77.8% (112/144) underwent semen analysis and spermocytogram, while 61.1% (88/144) had a sperm culture performed. Testicular ultrasound was conducted in 31.6% (46/144) of cases, revealing a limited number of varicocele diagnoses.

The most frequent sperm abnormalities were teratozoospermia in 13.9% (20/144) of cases and oligoasthenozoospermia in 11.8% (17/144).

Table 3. Clinical and paraclinical characteristics of male partners suffering from couple infertility at the ERHC (n = 144).

Variable	Mean ± SD/n (%)
Participation in evaluation	144 (55% of total couples)
Semen analysis/spermogram	112 (77.8%)
Sperm culture	88 (61.1%)
Testicular ultrasound	46 (31.9%)
Hormonal workups	0 (0%)
Sperm abnormalities	Teratozoospermia: 20 (13.9%) Oligoasthenozoospermia: 17 (11.8%) Asthenospermia: 9 (6.25%) Necrospermia: 8 (5.6%) Oligo-astheno-teratospermia: 6 (4.2%)
Ultrasound abnormalities	Normal: 12 (8.3%) Varicocele: 8 (5.6%) Other: 26 (18%)
Overall male factor infertility	46 (32% of evaluated partners)

3.5. Etiological Distribution of Couple Infertility (Figure 1)

Based on the combined results of female and male investigations, infertility was attributed to a female factor in 47% of couples, a male factor in 32%, and mixed causes in 21% of cases.

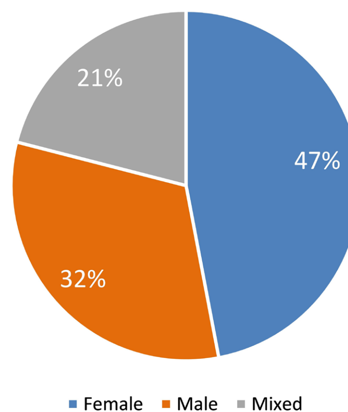

Figure 1. Origine of couple infertility at the ERHC.

4. Discussion

This study provides an updated overview of the epidemiological and clinical profile of couple infertility in a regional referral hospital in southern Cameroon. The observed prevalence, patterns of infertility, and etiological distribution offer important insights into the local determinants of infertility and align with trends reported in sub-Saharan Africa, while also highlighting specific contextual challenges.

4.1. Magnitude of Couple Infertility

Couple infertility accounted for **14.16%** of gynecological consultations at the Ebolowa Regional Hospital Center. This proportion confirms that infertility represents a substantial reason for gynecological consultation in this setting. Comparable frequencies have been reported in several African studies, including those from Mali, Nigeria, and Central Africa, with reported prevalences ranging from 12% to over 20% [2] [5] [7]. Variations across studies may reflect differences in study design, population characteristics, access to specialized care, and sociocultural perceptions surrounding infertility.

The relatively high frequency observed in our study may also be explained by the hospital's role as a regional referral center, where couples with prolonged infertility are more likely to seek specialized evaluation.

4.2. Sociodemographic Profile of Infertile Couples

The mean age of women (28.6 ± 4 years), with a predominance of the 26 - 30-year age group, is consistent with findings from other African series [2] [5] [7] [8] [13]-[15]. This age range corresponds to the period of optimal biological fertility, which likely explains the increased motivation to seek medical assistance when conception does not occur. Similarly, the most represented age group among men (31 - 35 years) reflects the common age gap between partners and has been reported in several comparable studies [2] [7].

A notable finding is the high proportion of women engaged in formal employment and the predominance of cohabitation rather than formal marriage. Unlike settings where cultural or religious norms strongly link procreation to marriage, the sociocultural context of southern Cameroon allows greater acceptance of cohabitation, which may facilitate earlier presentation to health facilities for fertility concerns. These patterns contrast with studies conducted in predominantly Muslim or more traditional settings, where marriage is almost universal among couples seeking infertility care [16].

4.3. Duration of Infertility and Sexual Activity

The mean duration of the desire to conceive (3.70 years) suggests that many couples delay seeking medical evaluation despite prolonged exposure to pregnancy risk. However, this duration remains slightly shorter than that reported in some Cameroonian studies [15], possibly indicating improved awareness or accessibility of reproductive health services in the region.

The reported frequency of sexual intercourse (approximately 3 - 4 times per week) is within the range considered adequate for natural conception, suggesting that infertility in this population is unlikely to be primarily related to insufficient sexual exposure. This finding supports the relevance of underlying biological and pathological factors.

4.4. Type of Infertility

Primary infertility predominated in this study, accounting for nearly two-thirds of cases. This pattern is consistent with several African studies [2] [7], although contrasts with others where secondary infertility is more frequent, particularly in settings with high rates of obstetric complications, unsafe abortions, or untreated reproductive tract infections [7] [13]. Differences in reproductive history, health-seeking behavior, and access to obstetric care may explain these discrepancies.

4.5. Female Etiologies of Infertility

Female factors were the leading contributors to couple infertility in this study, accounting for **47%** of cases. Among these, **tubal obstruction** was by far the most frequent etiology. This predominance is in line with numerous African reports and strongly correlates with the high prevalence of previous sexually transmitted infections, particularly *Chlamydia trachomatis* infection, identified in more than 40% of women in our cohort [2] [5] [7] [8].

Uterine fibroids and polycystic ovary syndrome were also common findings, reflecting the growing burden of non-communicable gynecological conditions in African urban populations. The relative contribution of these etiologies varies widely across studies, depending on diagnostic capacity and population characteristics. Nonetheless, the central role of tubal pathology underscores the need for strengthened prevention, early diagnosis, and prompt treatment of sexually transmitted infections.

4.6. Male Factors and Partner Participation

Male factors accounted for **32%** of infertility cases, with sperm abnormalities such as teratozoospermia and oligoasthenozoospermia being the most frequently identified. This distribution is consistent with international literature, which recognizes sperm abnormalities as the leading causes of male infertility [19] [20].

However, the true contribution of male factors may be underestimated in this study, given that only **55%** of male partners participated in the diagnostic process. Cultural perceptions, stigma, and reluctance to undergo fertility evaluation remain major barriers to male involvement in infertility care in many African settings. Similar challenges have been described in studies from Cameroon and Mali. [2] [5] [8].

4.7. Etiological Distribution and Clinical Implications

The presence of mixed infertility in **21%** of couples highlights the multifactorial nature of infertility and reinforces the importance of a comprehensive, couple-centered approach to evaluation and management. Focusing exclusively on one partner risks overlooking contributory factors and delaying appropriate treatment.

5. Study Limitations

The limitations of this study include its retrospective design, reliance on medical records, and the single-center setting, which may limit generalizability. In addition, incomplete male participation and the absence of advanced diagnostic techniques may have led to underestimation of certain etiologies. Despite these limitations, the study provides valuable data on infertility patterns in a previously under-documented region of Cameroon.

6. Conclusions

Couple infertility represents a significant and persistent public health concern in southern Cameroon, accounting for more than one in seven gynecological consultations at the Ebolowa Regional Hospital. This high prevalence highlights the substantial medical, psychological, and social burden associated with infertility in a setting where parenthood remains a central societal expectation.

The affected women were predominantly young and within their peak reproductive years, emphasizing that infertility in this population is not primarily age-related but rather linked to preventable and potentially treatable conditions. Primary infertility was the most frequent presentation, and female factors—particularly tubal pathology—emerged as the leading contributors. The strong association between tubal obstruction and a high history of sexually transmitted infections, notably *Chlamydia trachomatis*, underscores the critical role of reproductive tract infections in the genesis of infertility in this context.

Male factors accounted for nearly one-third of infertility cases and were mainly characterized by sperm abnormalities. However, the limited participation of male

partners in the diagnostic process suggests that the true burden of male infertility may be underestimated. This finding reflects persistent sociocultural barriers that hinder male engagement in reproductive health care and calls for targeted strategies to promote male involvement in infertility evaluation.

Overall, the etiological distribution observed in this study confirms the multifactorial nature of couple infertility and highlights the need for a comprehensive, couple-centered approach to diagnosis and management. Strengthening prevention and early treatment of sexually transmitted infections, promoting timely referral to specialized care, and improving awareness and participation of male partners are essential pillars for reducing the burden of infertility in this region.

Incorporating integrated infertility services into routine reproductive health programs, particularly at the regional level, could substantially improve outcomes for affected couples. Further multicenter, prospective studies with broader diagnostic coverage are warranted to refine etiological understanding and inform context-adapted clinical guidelines and public health policies in Cameroon and similar settings.

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Ethical Approval

This study was approved by the ERHC ethics committee. Informed consent was obtained from all participants prior to data collection. All procedures involving human participants were conducted in accordance with the Declaration of Helsinki.

Authors' Contribution

- **Data design and acquisition:** Messakop M.Y., Bilo'o L.L., Njemba M.J.M., Mboua N.V., Hirzel R., Aboui F.
- **Data analysis and interpretation:** Messakop M.Y., Hirzel R., Mboua N.V., Bisay S.U., Bilo'o L, Atangana E.H., Ndoumba A., Aboui F.
- **Editing of the article:** Messakop M.Y., Njemba M.J.M., Edzimbi A., Hirzel R.
- **Critical review of intellectual content**: Bengono R., Foumane P., Ekono G.M.

Conflicts of Interest

The authors declare no conflict of interest.

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